

CLAIMS:

1 1. A method of compressing an image, the image being having gray scale values,  
2 comprising:

3 (a) dividing the image into quadrants;

4 (b) measuring the gray scale variation in each quadrant so that each  
5 quadrant is either a low variation quadrant or a high variation quadrant;

6 (c) replacing any low variation quadrants with an estimate for the particular  
7 quadrant;

8 (d) determining whether any high variation quadrants can be estimated using a  
9 contractive map of the image; and if not, applying (a), (b), (c), and (d) to the  
10 particular one or more high variation quadrants that cannot be estimated by a  
11 contractive map of the image.

1 2. The method of claim 1, wherein the gray scale values comprise  
2 the intensity image component of a color image.

1 3. The method of claim 1, wherein the gray scale variation in each quadrant is  
2 measured using the statistical variance of the gray scale values in the particular  
3 quadrant.

1 4. The method of claim 3, wherein a low variation quadrant has a statistical  
2 variance below a predetermined threshold value and a high variation quadrant  
3 has a statistical variance above or equal to the predetermined threshold.

- 1 5. The method of claim 3, wherein a low variation quadrant has a statistical  
2 variance below or equal to a predetermined threshold value and a high variation  
3 quadrant has a statistical variance above the predetermined threshold.
- 1 6. The method of claim 1, wherein the estimate of the particular low variation  
2 quadrant comprises the statistical mean of the gray scale values in the particular  
3 quadrant.
- 1 7. The method of claim 1, wherein the contractive map comprises applying a two-  
2 by-two spatial summing filter.
- 1 8. The method of claim 7, wherein the high variation quadrant is estimated using a  
2 scalar multiple of the contractive map of the image.
- 1 9. An article comprising a storage medium having stored thereon instructions, that,  
2 when executed by a computing platform, results in compression of an image  
3 having gray scale values by:  
4 (a) dividing the image into quadrants;  
5 (b) measuring the gray scale variation in each quadrant so that each quadrant is  
6 either a low variation quadrant or a high variation quadrant;  
7 (c) replacing any low variation quadrants with an estimate for the particular  
8 quadrant;

(d) determining whether any high variation quadrants can be estimated using a contractive map of the image; and  
if not, applying (a), (b), (c), and (d) to the particular one or more high variation quadrants that cannot be estimated by a contractive map of the image.

10. The article of claim 9, wherein the image having the gray scale values comprises an intensity image component of a color image.

11. The article of claim 9, wherein the gray scale variation in each quadrant is measured using the statistical variance of the gray scale values in the particular quadrant.

12. The article of claim 9, wherein the estimate of the particular low variation quadrant comprises the statistical mean of the gray scale values in the particular quadrant.

13. The article of claim 9, wherein the contractive map comprises applying a two-by-two spatial summing filter.

14. The article of claim 13, wherein the high variation quadrant is estimated using a scalar multiple of the contractive map of the image.

1 15. A method of decompressing a codebook for a compressed gray scale image  
2 comprising:

3 (a) forming a decompression estimate image from scalar multiples of a  
4 contractive map of a previous decompression estimate image, the scalar multiples  
5 being provided by the codebook;

6 (b) if the decompression estimate image and the previous decompression  
7 estimate image are equal, then dividing the decompression estimate into quadrants  
8 and applying (a), (b), and (c) by treating the quadrants as the previous decompression  
9 estimate image until the codebook is empty of scalar multiples to apply;

10 (c) if the decompression estimate image and the previous decompression  
11 estimate image are not equal, apply (a), (b), and (c) by treating the decompression  
12 estimate image as the previous decompression estimate image.

1 16. The method of claim 15, wherein the codebook includes at least one mean gray  
2 scale value, and further comprising:

3 after the codebook is empty of scalar multiples to apply to contractive maps:

4 scaling the result image based, at least in part, in a mean gray scale value for  
5 the compressed gray scale image, and

6 reconstructing those quadrants for which a mean gray scale level has been  
7 stored.

1 17. The method of claim 16, wherein a previous decompression estimate image  
2 comprises an arbitrary image having dimensions of the image being decompressed and  
3 having at least one non-zero pixel value.

1 18. The method of claim 16, wherein the contractive map comprises applying a two-  
2 by-two spatial summing filter.

1 19. An article comprising: a storage medium having stored thereon instructions, that,  
2 when executed by a computing platform, results in decompression of codebook for a  
3 compressed gray scale image by:

4 (a) forming a decompression estimate image from scalar multiples of a  
5 contractive map of a previous decompression estimate image, the scalar multiples  
6 being provided by the codebook;

7 (b) if the decompression estimate image and the previous decompression  
8 estimate image are equal, then dividing the decompression estimate into quadrants  
9 and applying (a), (b), and (c) by treating the quadrants as the previous decompression  
10 estimate image until the codebook is empty of scalar multiples to apply;

11 (c) if the decompression estimate image and the previous decompression  
12 estimate image are not equal, apply (a), (b), and (c) by treating the decompression  
13 estimate image as the previous decompression estimate image.

1 20. The article of claim 19, wherein the codebook includes at least one mean gray  
2 scale value, and wherein the instructions, when executed, further result in:

3 after the codebook is empty of scalar multiples to apply to contractive maps:  
4 scaling the result image based, at least in part, in a mean gray scale value for  
5 the compressed gray scale image, and reconstructing those quadrants for which  
6 a mean gray scale level has been stored.

1 21. The article of claim 19, wherein a previous decompression estimate image  
2 comprises an arbitrary image having dimensions of the image being decompressed and  
3 having at least one non-zero pixel value.

1 22. The article of claim 19, wherein the instructions, when executed, further result in  
2 the contractive map comprising applying a two-by-two spatial summing filter.

1 23. A method of compressing an image, the image being having gray scale values,  
2 comprising:

- 3 (a) dividing the image into quadrants;
- 4 (b) determining whether any quadrants can be estimated using a contractive
- 5 map of the image; and if not, recursively applying (a) and (b) to the particular one
- 6 or more quadrants that cannot be estimated by a contractive map of the image.

1 24. The method of claim 23, and further comprising:  
2 measuring the gray scale variation in each quadrant so that each quadrant is  
3 either a low variation quadrant or a high variation quadrant;

- 4 replacing any low variation quadrants with an estimate for the particular
- 5 quadrant.